Supplementary Material

Fluid Inclusion Studies of Barite Disseminated in Hydrothermal Sediments of the Mohns Ridge

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Table S1. EDS data of volcanic glasses collected from hydrothermally altered sediments of the Jan Mayen vent field area.

Sample	5516	6130-I	6130-II	6131-I	6131-II	6131-III	6138-I	6146-II
Number of glasses	24	23	6	14	12	52	3	11
	Mean content, wt. %							
Na_2O	0.95	2.94	2.88	2.80	2.90	2.87	3.03	2.44
MgO	1.13	5.19	5.21	6.11	6.24	5.63	4.19	7.46
Al_2O_3	1.75	13.94	13.88	14.10	15.27	13.78	13.08	15.11
SiO_2	39.32	54.87	54.76	54.46	54.94	54.70	55.35	53.28
P_2O_5	1.58	0.37	0.36	0.15	0.20	0.28	0.43	0.26
K_2O	0.15	1.08	1.07	0.68	0.63	0.83	1.14	0.86
CaO	4.46	9.25	9.56	10.25	11.61	9.74	8.46	12.44
TiO_2	0.08	1.97	1.95	1.64	1.46	1.90	2.42	1.39
MnO	0.00	0.18	0.21	0.16	0.11	0.19	0.20	0.10
FeO	50.58	10.20	10.28	9.54	6.59	9.95	11.73	7.13
Total	100.00	100.00	100.16	99.89	99.95	99.87	100.03	100.49

Table S2. XRF major element composition and Ba (wt.%) of the surface sediment samples and hyaloclastites.

Sample	Lyer, cm	N	W	LOI	Na_2O	MgO	Al_2O_3	SiO_2	K_2O	CaO	TiO_2	MnO	Fe_2O_{3tot}	P_2O_5	S_{tot}	Total	Ba	Rock type
5535	0-5	73°33.0'	08°09.0'	0.03	2.32	8.63	14.40	51.34	0.14	11.04	1.36	0.17	10.19	0.10	0.11	99.83	0.01	hyaloclastite
6446	0-3			0.33	2.21	8.72	16.13	49.60	0.68	12.73	1.33	0.13	7.54	0.22	0.11	99.73	0.03	-//-
6131	0-10	71°17.9'	05°46.4'	0.74	2.96	4.66	15.52	52.81	0.69	10.68	1.89	0.15	9.27	0.20	0.18	99.75	0.07	-//-
6138	0-3	71°15.7'	05°48.9'	0.12	2.86	4.53	14.90	51.30	0.96	9.93	2.15	0.23	12.32	0.29	0.17	99.76	0.05	-//-
6130	0-3	71°16.2'	05°48.1'	9.69	2.35	4.47	12.01	46.65	0.93	9.30	2.00	0.19	11.76	0.26	0.19	99.80	0.04	-//-
6130	0-2	-//-	-//-	0.60	2.71	5.40	14.16	51.52	0.96	9.86	2.08	0.19	11.85	0.27	0.18	99.78	0.04	-//-
6131	1-8	71°17.9'	05°46.4'	6.75	1.98	5.01	16.21	47.73	0.79	5.63	1.84	0.11	12.24	0.27	1.20	98.76	0.65	sediment
6131	0-7	-//-	-//-	16.32	1.01	3.89	21.46	41.74	0.57	1.02	2.19	0.03	7.67	0.13	3.76	98.79	0.11	-//-
6131	1-7	-//-	-//-	19.54	0.33	1.27	22.23	32.60	0.58	1.22	2.18	0.07	11.98	0.27	5.75	98.02	0.13	-//-
6130	0-2	71°16.2'	05°48.1'	10.37	1.32	3.57	12.08	46.42	1.49	14.27	1.60	0.21	7.76	0.39	0.30	99.53	0.07	-//-
6132	0-2	71°18.0'	05°42.0'	5.26	1.52	3.64	12.46	48.96	1.32	11.95	2.21	0.29	11.15	0.50	0.54	98.80	0.30	-//-
6133	0-2	71°17.8'	05°41.9'	11.35	2.36	2.75	8.86	39.37	1.12	10.04	1.26	0.49	20.97	0.77	0.45	98.79	0.30	-//-
6133	0-3	-//-	-//-	10.96	2.40	2.68	8.67	37.43	1.03	12.79	1.50	0.60	20.46	0.83	0.43	98.78	0.28	-//-
6146	0-2	71°18.5'	05°40.3'	4.54	1.45	4.30	12.08	48.68	1.35	16.17	1.63	0.23	8.56	0.43	0.37	98.79	0.13	-//-
6146	2-6	-//-	-//-	0.10	1.51	7.88	15.70	48.67	0.88	13.40	1.59	0.15	8.81	0.26	0.31	99.26	0.04	-//-
6137	0-1	71°17.8'	05°46.9'	6.44	2.12	6.18	16.15	48.82	1.13	5.24	1.81	0.31	10.47	0.29	0.83	98.79	0.88	-//-
6137	1-3	-//-	-//-	6.59	1.89	5.32	15.36	49.06	1.13	5.18	1.71	0.25	12.21	0.36	0.72	98.78	0.76	-//-
6137	3-4	-//-	-//-	3.56	2.39	5.16	15.06	50.02	1.07	6.14	1.81	0.17	13.27	0.34	0.78	98.77	0.83	-//-
6137	4–10	-//-	-//-	6.64	1.88	4.72	15.26	49.14	1.12	5.24	1.74	0.12	12.79	0.33	0.81	98.79	0.86	-//-
6131	0-1	71°17.9'	05°46.4'	6.61	1.94	4.56	18.44	47.03	0.84	5.11	1.96	0.11	11.62	0.20	1.36	98.78	0.56	-//-
6131	1-2	-//-	-//-	5.40	1.42	4.74	18.50	47.40	0.85	5.83	1.96	0.12	12.12	0.23	1.24	98.81	0.57	-//-
6131	2-3	-//-	-//-	5.32	1.92	5.05	17.78	47.81	0.79	6.17	1.87	0.12	11.48	0.22	1.25	98.78	0.53	-//-
6131	3-4	-//-	-//-	5.56	1.80	5.26	17.09	48.02	0.83	6.33	1.93	0.11	11.34	0.22	1.28	98.77	0.44	-//-
6131	4-5	-//-	-//-	6.53	1.97	5.45	16.88	48.07	0.85	5.33	1.93	0.10	11.17	0.20	1.31	98.79	0.40	-//-
6131	5-6	-//-	-//-	6.56	1.96	4.71	16.36	47.18	0.86	6.67	1.87	0.12	11.51	0.20	1.78	98.78	0.65	-//-
6131	6-7	-//-	-//-	5.65	1.87	5.34	17.69	47.85	0.80	5.99	1.85	0.11	10.86	0.20	1.58	98.79	0.58	-//-
6131	0-10	-//-	-//-	5.46	1.40	5.82	16.71	48.44	0.84	5.39	1.94	0.11	11.70	0.24	1.73	98.78	0.72	-//-
5516	0-3	71°17.9'	05°46.2'	2.10	2.45	6.08	15.72	51.08	0.82	8.88	1.83	0.13	9.47	0.15	0.30	99.01	0.08	-//-
5516	0-3	-//-	-//-	6.80	1.38	5.21	15.30	42.06	0.44	0.81	2.33	0.01	9.28	0.18	9.80	93.60	5.85	-//-
5516	0-3	-//-	-//-	7.60	1.95	5.31	15.11	52.09	1.56	3.24	1.65	0.04	5.54	0.19	2.40	96.68	2.41	-//-
6147	0-10	73°34.0'	08°09.8'E	10.97	2.51	23.19	1.59	45.04	0.16	0.43	0.05	0.12	12.51	0.09	2.63	98.29	1.65	sediment